



**State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES**

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TO: Sanitary Landfills & Public Sewage Treatment Operations

SUBJECT: Disposal and Landfilling of Deer Carcasses from the CWD Zone

In recent weeks there has been a great deal of concern voiced on the part of local governments and the public over the issue of disposing of whitetail deer carcasses in our state's sanitary landfills. As part of the State's response to the discovery of Chronic Wasting Disease (CWD) in Wisconsin, a team of sanitary landfill engineers, wastewater and air management experts, veterinarians and epidemiologists from several agencies were tasked with exploring the issues and options associated with carcass disposal. Based on this consultation, the Department has summed up its conclusions and has established several specific management actions in the attached Briefing Paper. Essentially, this group of scientists and technical staff have concluded that, with appropriate precautions, healthy appearing animals can be safely disposed of in modern sanitary landfills within the state.

I hope you'll take a moment and study their findings as you decide on management of this issue at your facility. The deer in question would come from the current CWD Eradication Zone or any future Eradication Zone created as a result of finding CWD in other areas of the state.

While there are no absolutes with any risk assessment and risk management decision, the Department believes, given the known science of CWD, the risk of spreading of the disease to healthy animals or the environment from the disposal of deer in sanitary landfills is minuscule. If deer are accepted at a landfill, I want our respective technical staff to discuss, on a case-by-case basis, any additional mitigative measures that might be desirable to provide an additional level of safety.

The shooting and removal of deer from the eradication zone will begin shortly. It is expected that approximately 1,000 of the estimated population of 25,000 animals will be removed within the next four months. All animals that are deemed "sickly" will be taken to a laboratory for further study and testing. Those animals will be transported to and incinerated at a medical waste incinerator in Illinois. Animals appearing to be in good physical condition can be landfilled as long as the steps outlined in the attached Briefing Paper are followed.

If you have any questions regarding landfill disposal, please contact John Melby (608) 264-8884 in the Bureau of Waste Management; for questions regarding sewage treatment operations, contact Duane Schuettepelz (608) 266-0156 in the Bureau of Watershed Management.

Thank you for your understanding in this difficult time.

Darrell Bazzell, Secretary  
Wisconsin Department of Natural Resources

**BRIEFING PAPER**  
**CONTROLLED LANDFILLING OF DEER CARCASSES**  
(June 6, 2002)

The disposal of large numbers of animal carcasses invariably poses technical and public perception challenges. The State of Wisconsin is now confronted with such a challenge in the face of handling carcasses and tissues that will be generated as a part of the chronic wasting disease (CWD) control and eradication program that involves the shooting and removal of deer from an eradication zone in south central Wisconsin. Beyond the logistical hurdles in handling large numbers of carcasses, there is the additional difficulty of managing the disease-specific agent, the prion protein, in such a way that it does not pose near or long-term threats.

The Department of Natural Resources, in consultation with scientists and other technical staff from the Department of Agriculture, Trade and Consumer Protection and the Division of Health, has evaluated several alternative methods for the disposal of deer carcasses that are being collected during the control and eradication program to assure there is a minimal threat for exposure to humans and other vulnerable animals. The Department believes that implementation of this plan will not result in an unacceptable risk to people, animals and the environment from CWD because the disease-causing agent will be destroyed and/or there are sufficient barriers in place that will minimize exposure.

This evaluation has concluded that some of the deer (those with outward symptoms of disease that have the highest probability of having the CWD) will be sampled and the carcasses incinerated in facilities designed for such purposes. This method of disposal will, based on all the scientific evidence at hand, destroy the disease-causing prion agent. Incineration will be done under carefully controlled and regulated conditions to assure complete destruction, and no emission of the disease agent. The ash from this incineration process will be placed in state-of-the-art landfills similar to those described below.

Incineration will, however, not be practical for the entire quantity of animals that will require disposal. Therefore, disposal of some animals from the eradication zone in modern, highly engineered sanitary landfills has been determined to be a safe and effective way to assure that the CWD disease agent is controlled and will not create an undue threat to human or animal health. This decision is based on the following information and strategies that will be employed in the CWD program:

1. Wisconsin regulations require active management of the landfill and its engineering systems for a minimum of 40 years after closure. Therefore, deer placed in these systems will be under active oversight for many years in the future.
2. Only healthy appearing animals will be placed in the landfill. All animals that have outward evidence of CWD will be incinerated. While there are likely animals who have contracted the disease, but have no outward appearance of the symptoms of the disease, this first barrier to further exposure will significantly reduce the potential amount of the disease agent that enters the landfill.
3. The prion protein is a hydrophobic material. This biochemical property makes it attach to other molecules, particularly solids and particulate matter, in general (Gale *et al.* 1998). Because landfills are composed primarily of solid wastes, the prion protein will have an affinity for this solid

material and remain tightly bound to the solid wastes, cover material and other solid particles in the landfill. This property minimizes the ability of the prion to enter liquids that flow in a landfill from precipitation on the upper surface and from liquids in the waste stream. This liquid, called leachate, is collected in a piping system installed in a landfill.

4. In addition to the biochemical attachment of the prions to particulate material in a landfill, the waste in a landfill acts as a filtering medium, reducing the potential for the prions to be carried in the liquid (leachate) that moves through a landfill. Therefore, deer that are brought to a landfill as part of this program will be placed in parts of the landfill that can later be identified and will be strategically sited high in the landfill such that any liquids will have to pass through many feet of waste material before reaching the leachate collection system. Any leachate collected will, therefore, have a very small possibility of having prions in the liquid. Because the leachate is normally transported to municipal wastewater treatment plants for treatment and disposal, the Department will assist the landfills and treatment plant owners to design any additional mitigative measures that may, on a case-by-case basis, provide any additional level of safety.
5. To prevent groundwater contamination from materials and substances that may be placed in them, modern landfills are designed with liners consisting of four feet of recompacted clay overlain by a High Density Polyethylene plastic membrane. The construction of the liner is carefully controlled and regulated. The liner is designed to prevent any liquid material that may contain prions from leaking to the groundwater.
6. Because animals may be eaten by birds and other vectors, or desiccate (dry) and become subject to movement by wind, Wisconsin regulations require that all animal carcasses be covered immediately upon acceptance at the landfill. Deer killed as part of the eradication program will be covered as they are received, eliminating any off-site transport of the prion agent by this route.
7. As noted earlier, the prion agent will be primarily attached to the solid material in the landfill. However, landfills produce various types of gaseous material that is collected by a gas extraction system. The gas is then routed through a flare or to an energy recovery system (turbine or reciprocating engine).
8. There are an estimated 10,000 to 20,000 deer that may need to be disposed of from the eradication area over a 6-month period. Assuming each deer averages approximately 150 pounds, an estimated 750-1500 tons of deer carcasses will be placed in landfills for disposal. This is a relatively small amount of material compared to the 1000 to 2000 tons of waste per day placed in a large sanitary landfill. This small fraction of the total waste in a landfill over its design life also minimizes the probability that the prions from the decomposing deer will be able to exit the system.

#### Reference

Gale, P.; Young, C.; Stanfield, G. and Oakes, D.; **A Review: Development of a Risk Assessment for BSE in the Aquatic Environment**. Journal of Applied Microbiology, 1998, vol 84 (pp.467-477)